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THE POST-WAR LEVEL OF COMMODITY PRICES

THE April number of THE REVIEW OF ECONOMIC STATISTICS presented a chart which shows the order or sequence in which the fundamental changes in business activity occurred during the period 1903–14. It will be clear to anyone who studies this chart that if the index upon which it is based had been available at the time, it would have enabled him to forecast the major developments of the eleven years which it covers. The purpose of the statistical service of the Harvard University Committee on Economic Research is to present, along similar lines, an index of current business conditions, which shall do for 1919 and subsequent years what the index published in the April number does for the period 1903 to 1914.

For the period 1914–18 the index appears to be valueless as a guide to business developments. This was expected when it was constructed. The Great War and government control of industry dislocated economic conditions to such an extent that the normal relations which the index shows to have obtained in time of peace could not fail to be disturbed; so that our chart shows for the period extending from 1915 to 1918 nothing but the abnormal conditions produced by the war. The fluctuations of the statistical series during the war were violent, and, apparently, erratic. It is not likely that even the most careful study of the movements which prevailed during the war period would throw any light on the course of future fluctuations.

The task before us is to construct an index of business conditions for the year 1919. The data in hand for this purpose are the series which formerly possessed significance as indices of general business conditions. At the outset we face three difficulties: first, many of our series of business statistics are, in the early months of 1919, still subject to influences of various kinds which make them, temporarily, of little use for our purposes;[1] second, some of the series of statistics show that there has been an abrupt break in the continuity of the phenomena which they measure and reflect;[2] third, still other series have permanently lost their significance as indices of business conditions because of a change in economic organization, or other reasons.[3] The first of these conditions may be expected to disappear as business returns to normal, and must simply be accepted as a disturbing factor as long as it continues. The second condition must likewise be accepted but the series may be adjusted to suit the altered situation. The third condition can only be met by substituting new series for the ones necessarily discarded. Regardless of these difficulties current statistics are, nevertheless, being used in many publications without any allowance for the fact that the series may have become discontinuous, and therefore comparisons of current items with those of previous years are meaningless, if not misleading.

If, then, we are to perform our task, the construction of an index of present business conditions, we must examine the current items of all of the series of statistics used in constructing the index for 1903–14 to determine whether the continuity of the series was interrupted or destroyed by the war. A decision that the continuity has been disturbed, however, must be based not merely upon an examination of the data themselves but upon an analysis of the present and prospective economic forces in operation. Finally, having decided that a given series must be adjusted there remains the statistical problem of the method to be used. In other words, our problem is twofold: it involves economic analysis and statistical technique.

The crux of the problem of interpreting current data is found in the movement of wholesale prices of commodities. If those series of statistics expressed in money values are to possess any significance whatever as indices of business conditions, we must first ascertain the meaning of current fluctuations in commodity prices. What are the pertinent facts in the present price situation? What is the probable trend of prices in the next few years? Are prices apt to return to the pre-war level, or are they apt to fluctuate about a new level nearly twice the pre-war level? If they return, will the transition take two, five, ten, or twenty years? If they fluctuate about the present level, how are we to ascertain that level? In other words, should the period from 1914 to 1918 be considered an episode or a period of transition to a new business era? In still other words, have fundamental price conditions radically changed?

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[1] New York clearings and outside clearings may have been affected by the federal reserve clearing system. H. Parker Willis, Director of Analysis and Research, thinks that the effects of the system are continuing.

Imports were restricted during the war. The replenishment of stocks together with high prices are keeping total values of imports high.

The values of building permits have been abnormally low since the spring of 1917 even with the cost of building materials 50 per cent higher than in 1914. Government restriction together with lack of confidence in the present price level have been effective in restraining building operations.

The number of business failures is abnormally low because of government restriction of new undertakings and the violent rise of prices from 1914 to 1918.

The par value of new incorporations fell violently beginning with the summer of 1917.

[2] Commodity prices rose violently during the war to a new level. Other series, such as clearings and imports, depending on commodity prices have, therefore, been disturbed.

Interest rates, for both long and short time paper, have apparently shifted to higher levels.

Railroad gross earnings need to be adjusted for the change in rates if the figures are to be comparable with previous ones.

[3] Railroad stock prices have lost their former significance since the railroads have been operated by the government.

The reserves of the New York clearing house banks (and those of other banks as well) have lost their old significance since the establishment of the federal reserve system.

If so, the significance of current data can be ascertained only by altering our bench-marks to correspond with the changed conditions.

1. The Worldwide Change in Commodity Prices, 1914–19

During the period 1903–13, Bradstreet's index of commodity prices in the United States increased about 15 per cent; from 1914 to the beginning of 1918, the index doubled; during 1918 there was a further increase of 5 per cent; from the high point of July 1918 to the current figure for May 1, 1919, there has been a recession of 10 per cent (Chart 4). Other index numbers for the United States tell substantially the same story. The index of wholesale prices of the Federal Bureau of Labor Statistics increased 109 per cent between July 1914 and September 1918 (Chart 16). Dun's index increased from 100 in July 1914 to a maximum of 195 in October 1918, and then declined to 181 in March 1919. Indices of wholesale prices in various countries, relative to prices of July 1914 as 100, are given in an accompanying table. Considering a special group of commodities, food, wholesale prices in the United States slightly more than doubled between July 1914 and the autumn of 1918. Since the armistice food prices have not fallen; rather there has been an increase of 3 per cent in wholesale prices. Retail prices of food increased 83 per cent between July 1914 and December 1918. The percentage increase of retail prices of food (the groups of articles varying) from 1914 are given for various countries in an accompanying table.

In Canada the wholesale price increase was greater than that in the United States, the change being from 100 in July 1914 to a maximum of 216 in November 1918. In March the Canadian figure stood at 206. In the United Kingdom both the *Statist* and the *Economist* indices increased 140 per cent from July 1914 to the autumn of 1918 (compared with increases of 109 and 116 per cent, respectively, in the United States and Canadian government indices). It is true that different lists of commodities were used in constructing the various indices. Nevertheless, we are safe in concluding that prices rose more in the United Kingdom than they did in the United States, and that in March 1919 they had fallen in the two countries 5 or 10 per cent from the maximum of the autumn of 1918.

INDICES OF WHOLESALE PRICES IN VARIOUS COUNTRIES RELATIVE TO PRICES OF JULY 1914 AS 100

(From the *Bulletin de la Statistique gênêral de la France*)

	England		France	Italy	Canada	United States					Australia
	Economist	Statist	Statistical Office	Professor Bachi	Department of Labor	Bureau of Labor Statistics	Dun	Bradstreet	Annalist	Gibson	Minister of Labor
Number of articles	44	45	45	44	172	294	200	96	25	22	92
1918											
January	225	226	320	396	191	187	186	208	192	202	164
February	227	227	326	414	196	189	190	209	198	207	163
March	229	228	334	430	200	189	190	209	198	214	167
April	232	230	340	437	200	193	192	213	201	222	
May	234	232	343	446	205	193	189	218	199	213	
June	238	233	336	452	208	195	188	220	194	208	
July	239	234	344	467	211	200	194	222	197	209	
August	244	238	358	471	211	204	194	221	198	208	
Sept.	243	239	363	472	212	209	195	220	203	209	
October	242	240	368	481	215	206	195	220	196	202	
November	242	237	366	476	216	208	193	218	199	202	166
December	238	238	360	421	214	208	192	220	201	..	165
1919											
January	228	231	356	401	213	204	192	214	206	203	
February	226	228	...	...	208	199	184	204	194	198	
March	223	224	...	...	206	202	181	199	206	209	
April	225	223	...	...	207	..	183	200	215	220	
May	..	..	...	...	...	..	185	199			

PERCENTAGE INCREASE IN THE RETAIL PRICES OF FOOD IN VARIOUS COUNTRIES AT THE UNDERMENTIONED DATES, AS COMPARED WITH JULY 1914*

(From the *Labour Gazette* † of April, 1919, p. 129)

Country	Percentage Increase in Retail Food Prices since July 1914					
	July 1915	July 1916	July 1917	July 1918	Latest figures available	
					Rise	Date
	Per Cent	Per Cent	Per Cent	Per Cent	P.C.	
United Kingdom	32	61	104	110	113	April 1919
Allied Countries:						
France (Paris)	22	32	83	106	148	Jan. 1919
" (other towns)	23 (July–Sep.)	42 (July–Sep.)	84 (July–Sep.)	144 (July–Sep.)	160	Dec. 1918
Italy	21	32	72	153	167	Sept. 1918
Portugal (Lisbon)	....	....	72	....	151	May 1918
United States	2 §	9	43	64	83	Dec. 1918‡
British Dominions:						
Canada	5	14	57	75	76	Mar. 1919‡
Australia	31	30	26	32 (June)	31	Oct. 1918
New Zealand	12	19	27	39	43	Nov. 1918
South Africa	....	....	....	32	35	Feb. 1919
India (Calcutta)	8	10	16	31 (Aug.)	35	Nov. 1918
Neutral Countries:						
Norway	....	60	114 (Aug.)	179	175	Nov. 1918
Sweden	24	42	81	168	230	Dec. 1918
Denmark	28	46	66	87	86	Jan. 1919
Holland (Am'd'm)	....	....	42	76	103	Dec. 1918
Switzerland	19	41	78	122	133	Dec. 1918
Spain	6 (Apr.-Sep.)	13 (Apr.-Sep.)	27 (Apr.-Sep.)	51 (Apr.-Sep.)		

* For qualifications affecting the above figures see monthly notes in the *Labour Gazette* under "Retail Prices," and especially the article on p. 439 of the issue for November, 1918.

† London; published by His Majesty's Stationery Office; prepared and edited at the offices of the *Ministry of Labour*, 13 Albermarle Street, W. 1.

‡ The latest figures available for the United States and Canada are taken, respectively, from the *Monthly Labor Review*, published by the United States Bureau of Labor Statistics, April, 1919, p. 111; and the *Labour Gazette*, published by the Department of Labour, Canada, April, 1919, p. 489. § Decrease.

In France, the index number of wholesale prices of the Statistical Office was 412.6 for the fourth quarter of 1918 as compared with 369.6 for the first quarter of 1918 and 115.6 for the year 1913. Wholesale prices in the autumn of 1918 were, therefore, 356 per cent of those in 1913, an increase of 256 per cent. Retail prices in Paris increased from 100 in July 1914 to 248 in January 1919. It is obvious that the increase of prices was much greater in France than in the United Kingdom or the United States.

In Italy, the level of wholesale prices in October 1918 was 481 as compared with 100 in July 1914. In Rome, the total of family expenditures was estimated at

238 per cent of the pre-war level. The retail price changes in Italy are, therefore, similar to those of France.

In Denmark, the increase of the prices of "necessaries of life" in January 1919 as compared with July 1914 was 90 per cent; food prices increased 86 per cent. In Norway, the "cost of living" increased 155 per cent from July 1914 to October 1918; foodstuffs increased 175 per cent.

In South Africa and India, the retail prices of foods had increased 35 to 50 per cent in the autumn of 1918 compared with pre-war prices.

In Australia, the wholesale prices of ninety-two commodities had risen from 100 in July 1914 to a maximum of 166 in November 1918, or a rise of 66 per cent.

For Sweden, G. Cassel states that the wholesale price level is much higher than that of the United Kingdom, the former reaching "330, which is the approximate figure for Swedish inflation in the autumn of 1918."[1]

Omitting from consideration Russia and the Teutonic Allies, it is probable that the various countries should be arranged *roughly* as follows with respect to the magnitude of wholesale price increases since July 1914:

Increase of 350 per cent	Italy
Increase of 250 per cent	France Norway Sweden
Increase of 140 per cent	United Kingdom Denmark
Increase of 100 per cent	Canada United States
Increase of 60 per cent	South Africa India Australia

The percentages given above are based on a comparison of available indices and express the relative price situation only approximately. The rise in the prices of individual commodities and classes of commodities was, of course, irregular. The commodities entering into the indices of different countries are not the same. Furthermore, the different indices for the same country do not always agree. For instance, Bradstreet's groups of commodities are arranged in the following order with respect to the magnitude of price increases to the maximum point since July 1914:

Group	Per cent of increase to maximum price	Date of maximum price
Oils	269	Sept. 1918
Miscellaneous	212	April 1919
Breadstuffs	192	March 1918
Coal and coke	192	July 1917
Chemicals and drugs	187	March 1916
Textiles	170	July 1918
Metals	163	Aug. 1918
Building materials	157	Jan. 1919
Fruits	142	Oct. 1917
Provisions	127	Dec. 1918
Hides and leather	94	Jan. 1917
Naval stores	90	Dec. 1918
Livestock	64	May 1919

The list arranged according to the magnitude of rise in May 1919 as compared with July 1914 is as follows:

Group	Per cent of increase in May 1919
Miscellaneous	177
Oils	168
Breadstuffs	141
Building materials	131
Provisions	116
Metals	95
Textiles	90
Chemicals and drugs	89
Fruits	75
Naval stores	73
Coal and coke	72
Hides and leather	69
Livestock	64

The eight groups of commodities of the Federal Bureau of Labor Statistics arranged according to magnitude of price increase to the maximum point since 1913, are as follows:

Group	Per cent of increase to maximum price	Date of maximum price
Metals and metal products	157	July 1917
Cloths and clothing	153	Oct. 1918
Chemicals and drugs	142	Oct. 1917
Farm products	136	Sept. 1918
House-furnishing goods	133	Sept. 1918
Food, etc.	107	Dec. 1918
Fuel and lighting	93	June 1917
Lumber and building materials	63	Nov. 1918

The list arranged according to the magnitude of rise in February 1919 as compared with 1913, is as follows:

Group	Per cent of increase in February 1919
House-furnishing goods	133
Cloths and clothing	121
Farm products	115
Food, etc.	93
Fuel and lighting	81
Chemicals and drugs	73
Metals and metal products	67
Lumber and building materials	62

The price indices for commodity groups of the Bureau of Labor Statistics are more trustworthy than those of the Bradstreet groups. The former are based upon 250 commodities while the latter are based upon 100 or less. Moreover, the *method* of computing indices used by Bradstreet's does not inspire confidence for a small number of commodities.

Index numbers based on a different grouping of the commodities utilized by the Bureau of Labor Statistics are arranged, according to magnitude of price increases to the maximum point since 1913, in the following order:

Group	Per cent of increase to maximum price	Date of maximum price
Farm products (raw materials)	155	Sept. 1918
Animal products (raw materials)	119	Sept. 1918
Consumers' goods	116	Dec. 1918
Producers' goods	112	July 1917
Mineral products (raw materials)	105	June 1917
Forest products (raw materials)	50	Nov. 1918

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[1] "Abnormal Deviations in International Exchanges," *The Economic Journal*, December, 1918, p. 414.

The list, arranged according to the magnitude of rise in March 1919 as compared with 1913, is as follows:

Group	Per cent of increase in March 1919
Farm products (raw materials)	135
Animal products (raw materials)	116
Consumers' goods	106
Producers' goods	89
Mineral products (raw materials)	70
Forest products (raw materials)	48

The price data presented point to the following conclusions:

The increase of wholesale prices in the United States has been less than that in any other great commercial country. The relations among the price levels of the various countries do not appear to have changed since the armistice.

In the United States the prices of commodities entering directly into cost of living (represented by the wholesale prices of house-furnishing goods, cloths and clothing, farm products, food, fuel, and lighting) are at a higher comparative level than those used in industry (represented by chemicals and drugs, metals and metal products, lumber, and building materials). Bumper crops are in prospect. There is a general shortage of housing. The situation favors industrial expansion, new construction, and high prices in this country.

2. The Change in Physical Production in the United States, 1914–18

During the period 1913–18, there was an enormous rise of prices — they approximately doubled. During this period there was also a speeding up of physical production. The increase of physical production, however, was much less than the increase of prices. The most reliable estimate of the increase in physical production was made for the War Industries Board by Wesley C. Mitchell.[1] A brief explanation of his method, in his words, and the table summarizing his results follow:

> In the preparation of the subjoined tables estimates of production, or imports, or production plus imports, as the case required, by years, 1913–18, inclusive, were secured for 90 staples, and in calculating the index number from these figures the supply available each year was weighted by the average price in 1917. . . .
>
> Beside the index number of the available supply of raw materials, there was calculated from data for the same 90 articles, an index of the increase of prices, in which prices of each year were weighted by production plus imports in 1917. Finally, an index of the current annual values of the raw materials produced and imported was computed. In this series, the annual supply of each staple was multiplied by the annual price. . . .
>
> In the table for " all commodities " the general result of the study is indicated in the form of three sets of index numbers. The first set, showing an increase from 100 for 1913 to 116 for 1918, indicates the increase in the physical volume of output, the second set, showing an increase for the same period from 100 to 192, indicates the rise in prices, while the third set, showing an increase from 100 to 225, reflects the combined effect of increase in output and rise in prices for the period under review.

INDEX NUMBERS OF THE PRODUCTION OF RAW MATERIALS, OF THE PRICES OF RAW MATERIALS, AND OF THE ANNUAL VALUE OF RAW MATERIALS PRODUCED, BY YEARS, 1913–18.

(90 Commodities)

	Aggregate Value (Millions of dollars)			Index Numbers (Aggregate for 1913 = 100)		
	Yearly production times 1917 prices	Yearly prices times 1917 production	Yearly prices times yearly production	Yearly production times 1917 prices	Yearly prices times 1917 production	Yearly prices times yearly production
1913	$30,375	$19,973	$17,390	100	100	100
1914	30,207	19,224	16,694	99	96	96
1915	32,482	21,418	18,455	107	107	106
1916	33,700	23,363	22,785	111	117	131
1917	34,748	34,748	34,748	114	174	200
1918	35,169	38,251	39,153	116	192	225

According to Mitchell's estimate " the physical volume of output " of industry (as measured by the increase in the production of raw materials) increased from 100 for 1913 to 116 for 1918. During the same period population is estimated by the Bureau of the Census to have changed roughly according to the following relative figures: 100, 102, 103, 105, 107, and 108 for the years 1913 to 1918, respectively. During all the four years of business activity, 1915–18, physical production increased more rapidly than total population. The first two years the increase resulted from fuller utilization of the normal industrial section of the population; the second two years the increase continued, in spite of conscription, by the aid of overtime work and female labor.

The year 1918, then, was a year of increased production as well as one of increased prices. Production was stimulated by increasing prices, relatively inefficient labor was utilized, overtime was common, costs mounted, business activity was at a maximum. In other words, 1918 was a year of intense business activity and, regardless of the war, presented many familiar features of such periods in the past. The prices of 1918 were high, not merely because of war, but because of the business cycle inaugurated by the war.

3. The Change in Money and Credit in Leading Countries, 1914–19

Prices in the United States have nearly doubled since 1913, and physical production has increased one-sixth. Prices in Europe have increased much more than they have in this country. What has been the corresponding change in money and credit in the United States and the leading commercial countries of Europe ?

The outstanding features of the monetary and credit situation in the United States at present as compared with the pre-war situation are, first, the development of the federal reserve system with the centralization of reserves, the issue of federal reserve notes, and the substitution of them for other forms of currency; second, the increase of gold held in this country during the period 1914–19 amounting to slightly over a billion

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[1] *Federal Reserve Bulletin*, April, 1919, p. 336.

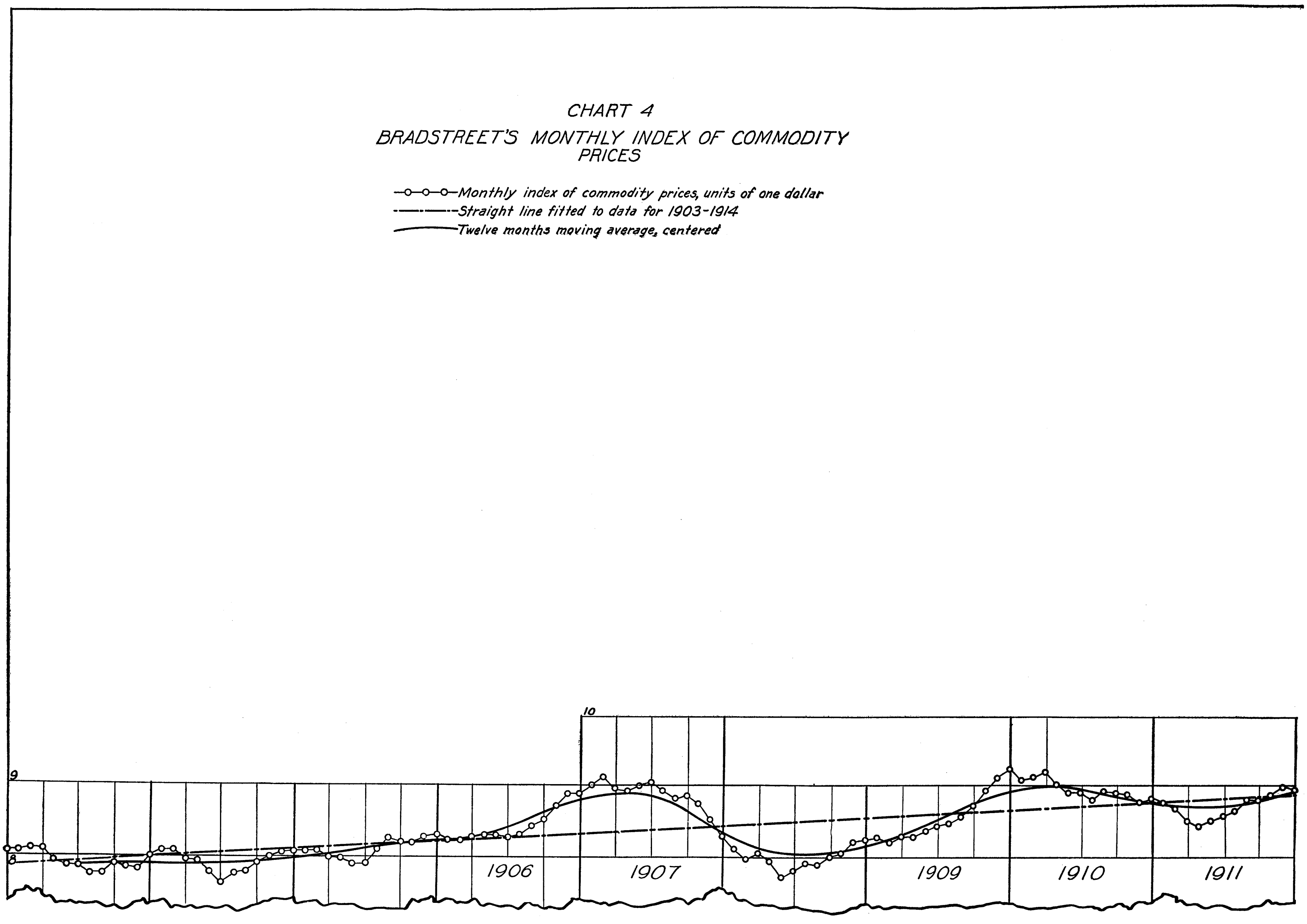
CHART 4
BRADSTREET'S MONTHLY INDEX OF COMMODITY PRICES

dollars;[1] third, the enormous net increase of our funded debt amounting, approximately, to $23,000,000,000; fourth, the change in status of this country in international trade and finance from that of a debtor to that of a creditor nation, and, as part of the process of change, the public loans of nearly $10,000,000,000 to the Allies; fifth, the 50 per cent increase of loans and deposits of commercial banks. All of these changes, have tended either to cause an increase in prices or to support such an increase when accomplished.

The establishment and development of the federal reserve system since 1914 have furnished the main basis for sound credit expansion in the United States. Although there has been a great increase of federal reserve notes (in part a substitution for gold certificates, in part credit expansion) yet the cash reserves are over 50 per cent of combined net deposits and federal reserve notes in actual circulation. The excess reserve or " free gold " now amounts to five or six hundred million dollars, a third of the cash reserves required by law. With this excess reserve there is no necessity for the adoption of a policy of contraction. It would appear that the federal reserve banks are in a position to support the present volume of credit or even to extend credit further, if such a policy is considered desirable.

Between April 1, 1914 and April 1, 1919 the per capita circulation of currency in the United States increased from $34.99 to $54.56; the total amount of currency in the country exactly doubled; the percentage of gold coin and bullion decreased from 51.1 per cent to 40.8 per cent (see accompanying table). It is probable, however, that the latter percentage is as effective in maintaining convertibility under the federal reserve

STOCK OF MONEY IN THE UNITED STATES ON APRIL 1, 1914 AND APRIL 1, 1919

	April 1, 1914		April 1, 1919	
Per Capita	$34.99		$54.56	
	Million dollars	Per cent distrib.	Million dollars	Per cent distrib.
Total	3,774	100.0	7,587	100.0
Gold coin (including bullion in Treasury)	1,927	51.1	3,092	40.8
Federal reserve notes	....	....	2,696	35.5
Federal reserve bank notes and national bank notes	752 *	19.9	880	11.6
Other	1,095	29.0	919	12.1

* Figure for national bank notes only.

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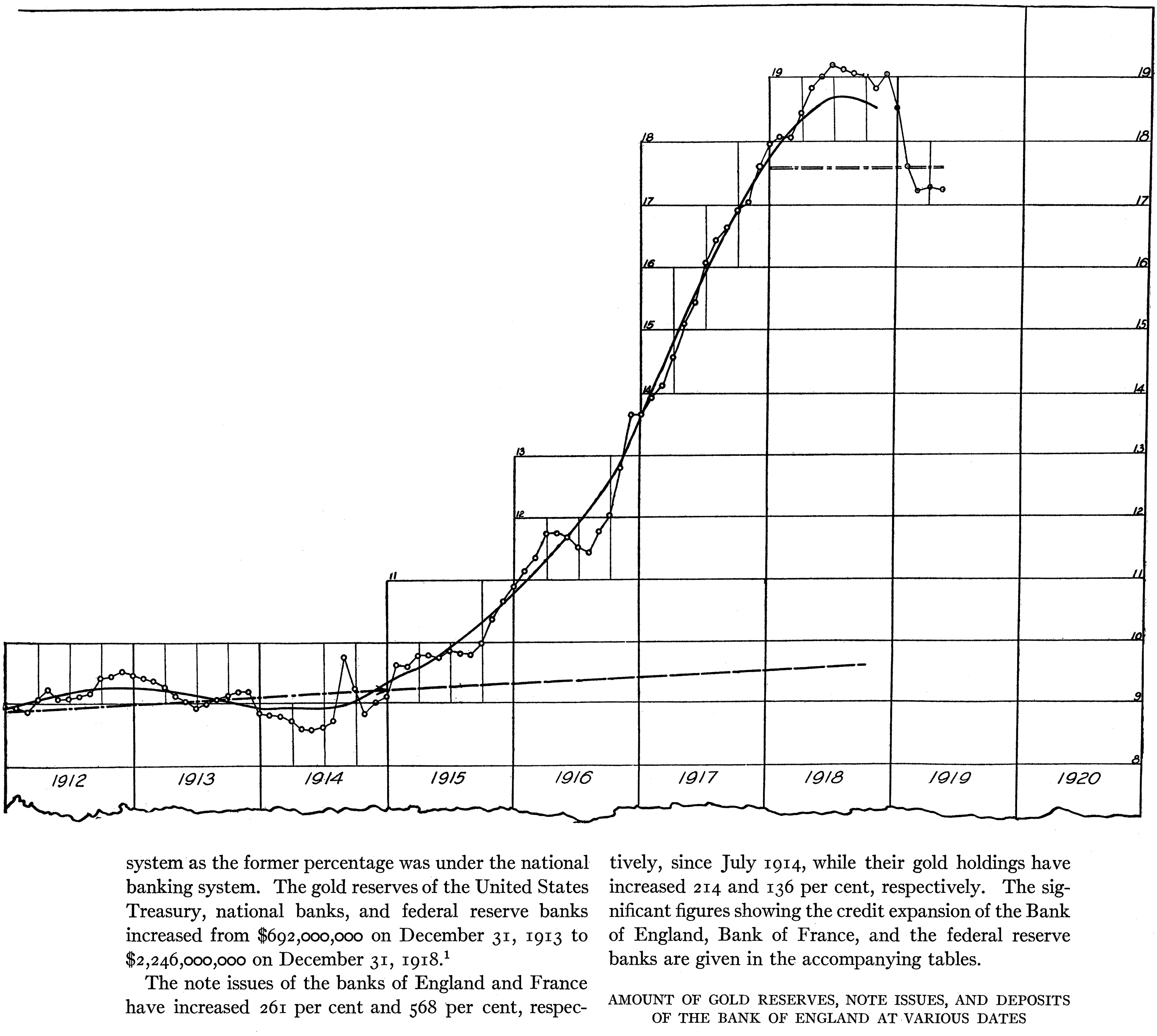
[1] According to the *Federal Reserve Bulletin* of May 1, 1919, p. 415, the figure for excess of gold imports over exports for the period August 1, 1914 to April 10, 1919 is $1,079,726,000.



system as the former percentage was under the national banking system. The gold reserves of the United States Treasury, national banks, and federal reserve banks increased from $692,000,000 on December 31, 1913 to $2,246,000,000 on December 31, 1918.[1]

The note issues of the banks of England and France have increased 261 per cent and 568 per cent, respectively, since July 1914, while their gold holdings have increased 214 and 136 per cent, respectively. The significant figures showing the credit expansion of the Bank of England, Bank of France, and the federal reserve banks are given in the accompanying tables.

AMOUNT OF GOLD RESERVES, NOTE ISSUES AND DEPOSITS OF THE BANK OF FRANCE AT VARIOUS DATES

UNIT: 1,000,000 FRANCS

	Range 1910–July 1914		July 1914	Date of Maximum since July 1914	Maximum to date	Last quotation (May 1919)	Per cent of increase July 1914 to May 1919
	Min.	Max.					
Total gold holdings of the Bank of France	3,121	4,093	4,093	May 1919	5,548	5,548	136
Note circulation of the Bank of France	4,976	6,045	6,045	May 1919	34,324	34,324	568
General deposits and current accounts of the Bank of France	462	944	929	July 1918	3,887	3,465	373

AMOUNT OF GOLD RESERVES, NOTE ISSUES, AND DEPOSITS OF THE BANK OF ENGLAND AT VARIOUS DATES

UNIT: £1,000,000

	Range 1910–July 1914		July 1914	Date of Maximum since July 1914	Maximum to date	Last quotation (May 1919)	Per cent of increase July 1914 to May 1919
	Min.	Max.					
Bullion in both depts. of the Bank of England	325	425	400	May 1919	856	856	214
Note circulation of the Bank of England	269	299	293	May 1919	765	765	261
Deposits other than public of the Bank of England	359	479	424	July 1915	1579	1115	263
Public deposits of the Bank of England	53	275	133	May 1915	1278	228	171

In the United States there appears to be nothing in our banking situation today to force contraction. Moreover, the interests of the business world and the government are alike opposed to contraction. Business men can point to the strong reserves of the federal

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[1] Figures for the movement of gold reserves of the principal central banks, 1900–18 are given in the *Federal Reserve Bulletin*, February 11, 1918, p. 140.

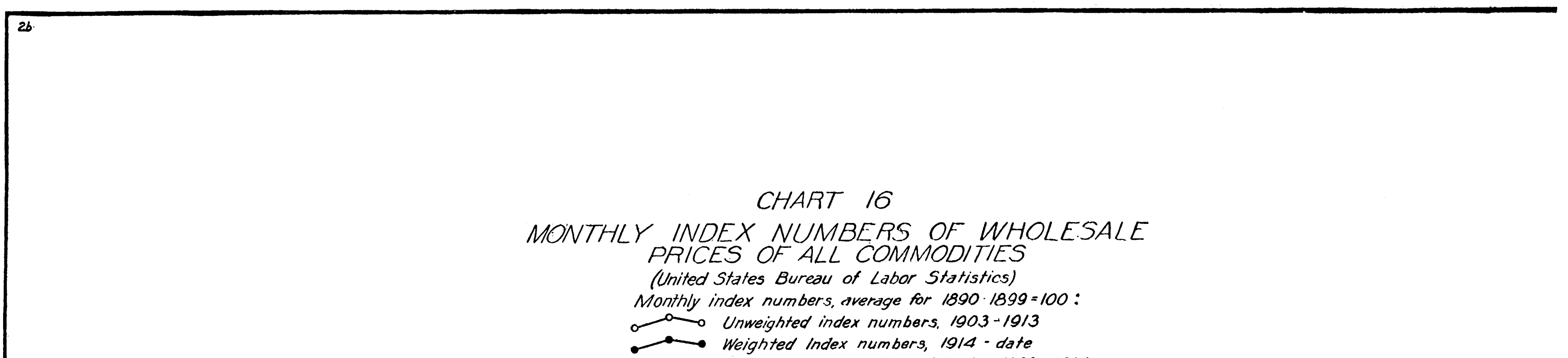

CHART 16
MONTHLY INDEX NUMBERS OF WHOLESALE PRICES OF ALL COMMODITIES
(United States Bureau of Labor Statistics)

AMOUNT OF GOLD RESERVES, NOTE ISSUES AND DEPOSITS OF THE FEDERAL RESERVE BANKS AT VARIOUS DATES

UNIT: $1,000,000

	Date of maximum since origin	Maximum to date	Quotation for May 16, 1919
Amount of federal reserve notes in actual circulation	Dec. 1918	2685	2532
Total reserves (including gold, silver, U. S. notes, etc.)	May 1919	2246	2246
Total earning assets	May 1919	2455	2455
Net deposits	May 1919	1866	1866

reserve banks as a good reason for a liberal loan policy; the government will be able to meet both interest and principal of its bond issues more readily if present prices are supported by a liberal lending policy.

In the United States *immediate* contraction of money and credit is improbable; in the world at large it appears to be impossible except as a result of a *débâcle*. The war expenses of European governments will continue for several months, at least. To these expenses will be added those of reconstruction, public and private. With per capita debts of $350 for Italy, $600 for Germany, $700 for the United Kingdom and $900 for France, none of these countries will find it an easy matter to meet their interest charges, ranging from 7 to 20 per cent of the aggregate income of the people. The immediate prospect is for additional bond issues rather than the liquidation of outstanding debts. According to the peace terms Germany must pay $5,000,000,000 not later than May 1, 1921 and issue bonds for an additional $25,000,000,000 with maturities of thirty years or less. This probably means some credit expansion although a considerable portion of the first payment will probably be made by the transfer of titles to property.

The gold production of the world is not apt to be an important influence on prices during the next few years. The increased costs of gold mining make an increase of productions difficult and may lead to a decrease.[1] The figures for annual gold production for the period 1900–18 are given in the accompanying table:

GOLD PRODUCTION OF THE WORLD, 1900–18

(IN MILLIONS OF DOLLARS)

Year	Amount	Year	Amount	Year	Amount
1900	255	1907	413	1913	460
1901	262	1908	443	1914	439
1902	297	1909	454	1915	470
1903	326	1910	455	1916	454
1904	347	1911	462	1917	424
1905	377	1912	466	1918	377 *
1906	402				

* Preliminary estimate of the Federal Reserve Board. See *Federal Reserve Bulletin*, January 1, 1919, p. 19.

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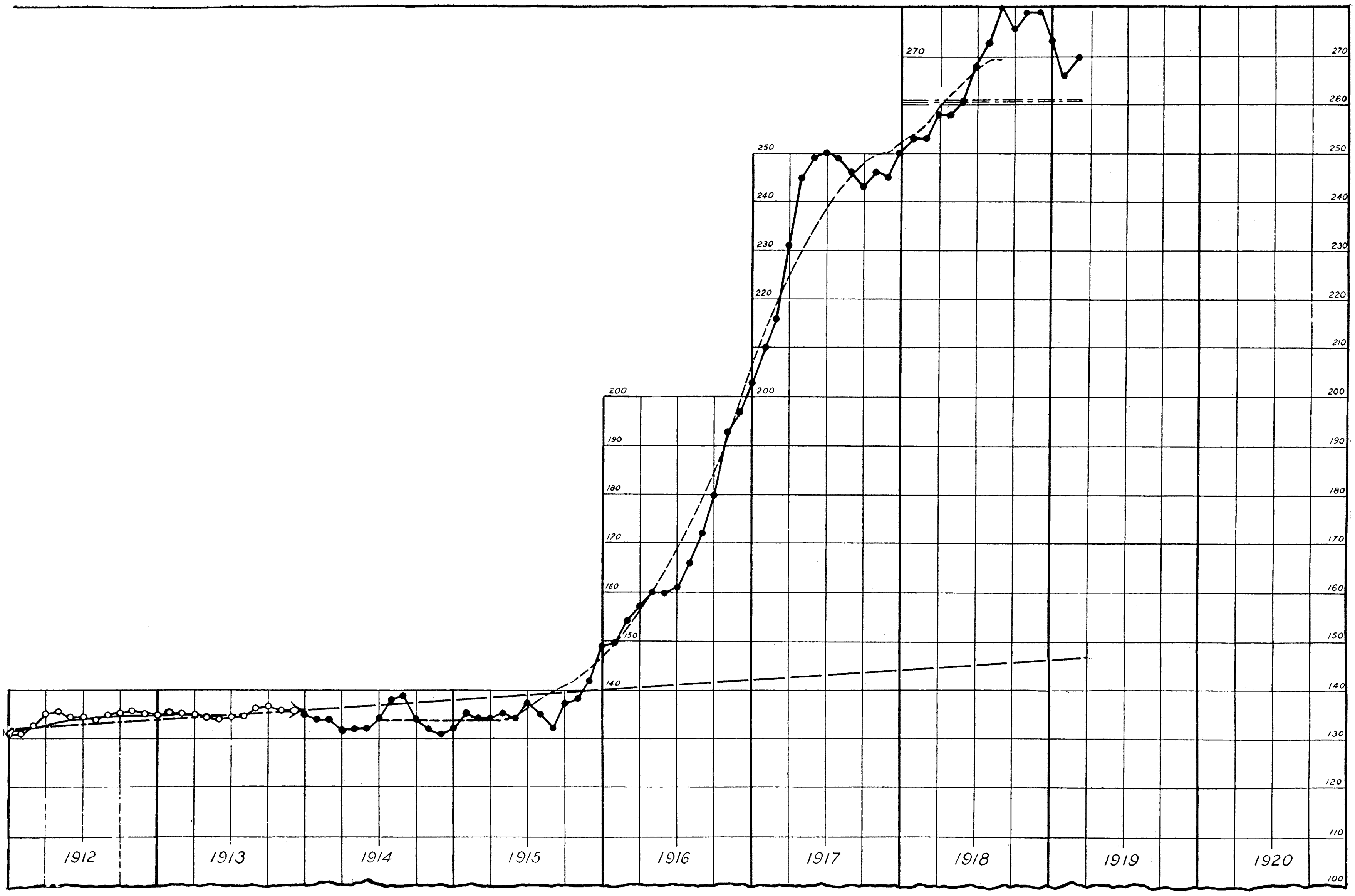
[1] See *Report of a Joint Committee Appointed from the Bureau of Mines and the United States Geological Survey by the Secretary of the Interior to Study the Gold Situation* (Bulletin 144, dated October 30, 1918).



In the world it is probable, then, that there will be constant or slightly decreased gold production, no immediate deflation, and active business during the next few years.

The United States is peculiar in four respects, first, because of its enormous stock of gold; second, because of the strong position of its banks; third, because of its recent shift in international finance from being a debtor to being a creditor nation, and fourth, because the increase of prices has been less than in any other large commercial country.

Europe needs our raw materials and machinery. Even with our prices at their present high levels she, apparently, can buy advantageously. Her present purchases have been made possible by the government credits to the Allies, which credits are nearly exhausted. To pay for continued imports Europe must either borrow from American bankers, place her securities with American investors, ship us goods, or pay gold. It is decidedly improbable that the European countries will release their gold. They may borrow for a time, but not indefinitely; they may sell us their securities, but for how long is a question. Ultimately, payment must be mainly in the form of goods, i. e., an increase of imports into the United States. If exports to Europe increase, imports ultimately will have to increase still further. All indications, therefore, point to an increase of imports at no distant time and this requires a high price level in the United States compared with that in other countries. The United States, then, will eventually have a higher price level than Europe. It is not until imports begin to exceed exports that our gold will move out of the country in considerable amounts and prices will fall. During the next year Europe will continue to demand our goods, paying for them with the proceeds of loans made by American bankers, perhaps under government regulation and guarantee. We may expect, therefore, continued excess of exports over imports for some months to come, followed in time by increase of imports. This subject of the international balance of trade is so important that a careful study is being made by the Harvard University Committee on Economic Research, the results of which will be published in the July number of the REVIEW.

4. THE NEW PRICE LEVEL

The outlook, then, is for prices to continue at least at their present level, and they may increase. Business will continue active. With confidence in the present high level of prices new construction will begin and the prices of building materials (less affected by the war than any other group of commodities) will stiffen. The present enormous favorable balance of trade will, however, tend to decrease, and it may be replaced by an unfavorable balance within a few years. The shift in the balance may possibly result in a trade depression, but this is not inevitable.

But the immediate outlook is for active business at the present level of prices. This period of activity may be accompanied by even higher prices than now prevail but the fluctuations will probably be phenomena of the business cycle rather than of radical monetary changes. In other words, the expected increase of prices will be one of the phenomena of the revival of business activity. Moderate business activity will, perhaps, develop into intense activity which will finally culminate and be followed by a period of depression in years to come.

The removal of government restraint from business means that the normal pre-war sequence of business phenomena revealed in our series of statistics will tend to reëstablish itself. It is probable that statistical data will give signs of any approaching economic disturbance. In June 1919 such signs are lacking.

At present, then, the stage is set for a period of business activity — the banks are sound, business failures are few, in general there is a scarcity of commodities, the prices of industrial stocks are not very high, and prices of building materials are comparatively low. The immediate outlook is for an advance of prices rather than a recession.

If the fluctuations in commodity prices are to be at a new level, what is that level? Let us consider the statistical problem of estimating that level.

The period 1915–18 should be considered a period of transition. During this period prices changed radically, first, because of the abnormal scarcity of commodities and the concurrent change in the monetary and credit systems made by the leading commercial countries, and second, because of stimulus given to business in this country from war orders. In other words, the price change between 1914 and 1918 is conceived to be due to two factors, the first being of much greater importance than the second. During the second half of 1918 business reached maximum activity. In that year both the index numbers of the production of raw materials and of commodity prices reached high points. In attempting to fix the level of prices at the present time (June 1919) it will be assumed that the maximum point reached by prices in 1918 was reached as a result of the combined action of the two causes just mentioned. What part of the maximum prices of 1918 should be ascribed to each cause? We know that during the period 1903–13 the greatest "bulge" in prices due to the second cause, namely, business activity, was in May 1907. In that month Bradstreet's series was 6.6 per cent above its line of secular trend and the Bureau of Labor series was 6 per cent above the line for that series. We shall assume that in 1918 the intense business activity carried the two price indices, 6.6 and 6 per cent, respectively, above the level that would have been reached if the general causes affecting the world's price level had alone been operative and their effect had not been supplemented by an outburst of intense business activity in the United States. In other words, if we designate the unknown level of prices in 1918 (which we wish to determine) by 100, the actual items for the two series of index numbers would be 106.6 and 106, respectively. On the basis of the assumption just described, the present level of Bradstreet's and the Labor Bureau indices, relative to average prices for 1913 as 100, are 191 and 194, respectively.[1]

The present level of prices for the two indices is represented by the horizontal lines on Charts 4 and 16. The lines are drawn horizontal because, at the present time, it does not appear that the United States will allow

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[1] Prior to the outbreak of the European War in 1914 the maximum divergence of Bradstreet's monthly index of commodity prices above the straight line fitted to the data for the period 1903–14 was attained during the year 1907. Our first step is to measure this divergence numerically. We are not interested, however, in the height reached by the individual items during this year, but rather in the general sweep of the price movement, which is well represented by the smooth curve of twelve months moving averages (see Chart 4).

In the month of May 1907 this curve reached a maximum value of \$8.93. The corresponding ordinate of linear trend was \$8.38. The curve was 6.6% above the line of trend (since $\frac{\$8.93}{\$8.38} = 106.6\%$), and this was the maximum divergence prior to 1915.

The fact that the index numbers of prices reached a maximum during 1918 has been pointed out in the paragraph to which this footnote is attached. Here again we are interested primarily in the general sweep of the price series rather than in the individual figures; therefore we will take as representing the maximum the average of the series for the year 1918, which is \$18.73.

Let us assume that this maximum reached in 1918 represents a divergence over the new price level as great as that of 1907 over the old price level. This latter divergence, it will be remembered, was 6.6 per cent. Then the level of prices for 1918, or in other words the ordinate of secular trend for 1918, would be \$17.60. This figure was obtained as follows:

Let b = ordinate of secular trend for 1918.

$$1.066b = \$18.73$$
$$b = \$17.60 \text{ to the nearest dime.}$$

The method of obtaining the ordinate of secular trend for 1918 for the United States Bureau of Labor Statistics' monthly index numbers of wholesale prices of all commodities was similar to that just described for Bradstreet's commodity prices. The maximum percentage deviation of the twelve months moving average curve above the line of secular trend was, as in the previous case, reached in May 1907. It was 6 per cent. (Obtained as follows: the twelve months moving average centering at May 1907 was 129.4. The ordinate of secular trend for the same date was 122.2. The ratio of the former to the latter was $\frac{129.4}{122.2} = 106\%$.)

Bradstreet's series was high during the entire year 1918, but the Bureau of Labor Statistics series was comparatively low during the earlier part of that year. (See Chart 16.) It rises sharply to a maximum for the last four months, the index numbers ranging from 276 to 280. (Beginning with January 1914 the Bureau of Labor Statistics changed both the method of computing the index numbers — see the April REVIEW, pp. 143, 144 — and the base. Prior to that date, the base had been the average for the period 1890–99; thereafter it was the year 1913. The index number for 1913 with the base 1890–99 was 135.2. In publishing and charting the data for 1914–19 in the REVIEW each item as published by the Bureau of Labor Statistics has, therefore, been multiplied by 135.2.) Let us take 278 as a sufficiently close estimate of our maximum figure, and assume that it represents a divergence over the new price level as great as that of 1907 over the old price level. We then obtain 262 as the ordinate of secular trend for the center of the four months period, September to December 1918. This figure was obtained as follows:

Let b = ordinate of secular trend for the center of the four months period, September to December 1918, using the average for the period 1890–99 as base.

Let b' = the same, using the average for 1913 as base.

$$1.06b = 278$$
$$b = 262 \quad \text{(Base: 1890–99), or}$$
$$b' = \frac{262}{135.2} = 194 \text{ (Base: 1913).}$$

inflation, while, on the other hand, immediate contraction appears to be improbable. As new data for the years 1919 and 1920 come to hand the lines of secular trend (representing the price level) will be adjusted.[1]

The levels of all statistical series dependent upon prices of commodities have undoubtedly been greatly disturbed. Only those series expressed in terms of physical units may be handled by direct application of the methods developed for the period 1903–14. Few such series covering a period long enough for purposes of statistical analysis are to be had. The production of pig iron, even during the unusual conditions which affected the industry during the war, is probably the best series available. The pre-war secular trend of pig-iron production has not been appreciably disturbed.

The cyclical fluctuations of Bradstreet's and the Bureau of Labor indices of prices measured from the new price level are presented, respectively, in Charts 104 and 116. The cyclical fluctuations of pig-iron production measured from the line of secular trend determined for the period 1903–16 are presented in Chart 102.

To summarize: In order to utilize current statistics as indices of current business conditions the long time trend must be ascertained. In ordinary times the best bases for estimating the current trend are the data of the ten or fifteen years immediately preceding. Business prosperity and depression are preëminently characterized by price movements. The Great War has disturbed prices so that the pre-war level gives no clue to the post-war level. In order to interpret current data it was found necessary to estimate the level of prices. That level has been estimated, therefore, by an analysis of the present situation and the application of an hypothesis which, it is thought, applies to the present situation. The trend thus found is, frankly, a forecast which will be revised as new data become available.

The fixation of the level of prices at any place means that bursts of business activity will carry prices above that level and periods of business depression will cause prices to fall below that level. In the present study we have concluded that price fluctuations during the coming months will be on a level about 90 per cent above the pre-war level. This conclusion is based on that assumption that there will be no European *débâcle* to destroy the monetary and credit structure supporting present prices. Although such a *débâcle* is not an impossibility we believe it is improbable and consequently should not be a ruling consideration in present calculations.

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[1] In order that the cyclical movement of prices during the next few years may not exercise undue influence on the determination of the trend the position of the lines which have been located will be properly weighted.

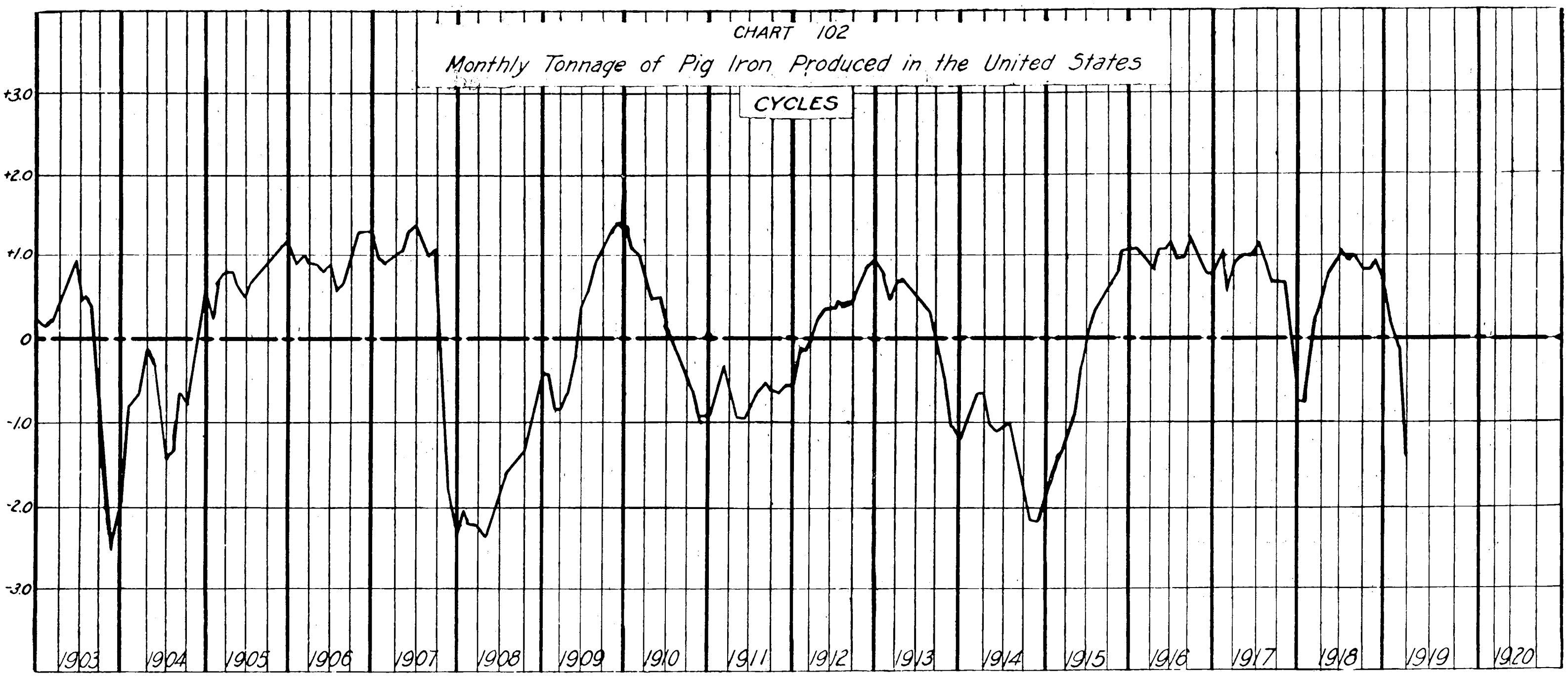

CHART 102

Monthly Tonnage of Pig Iron Produced in the United States

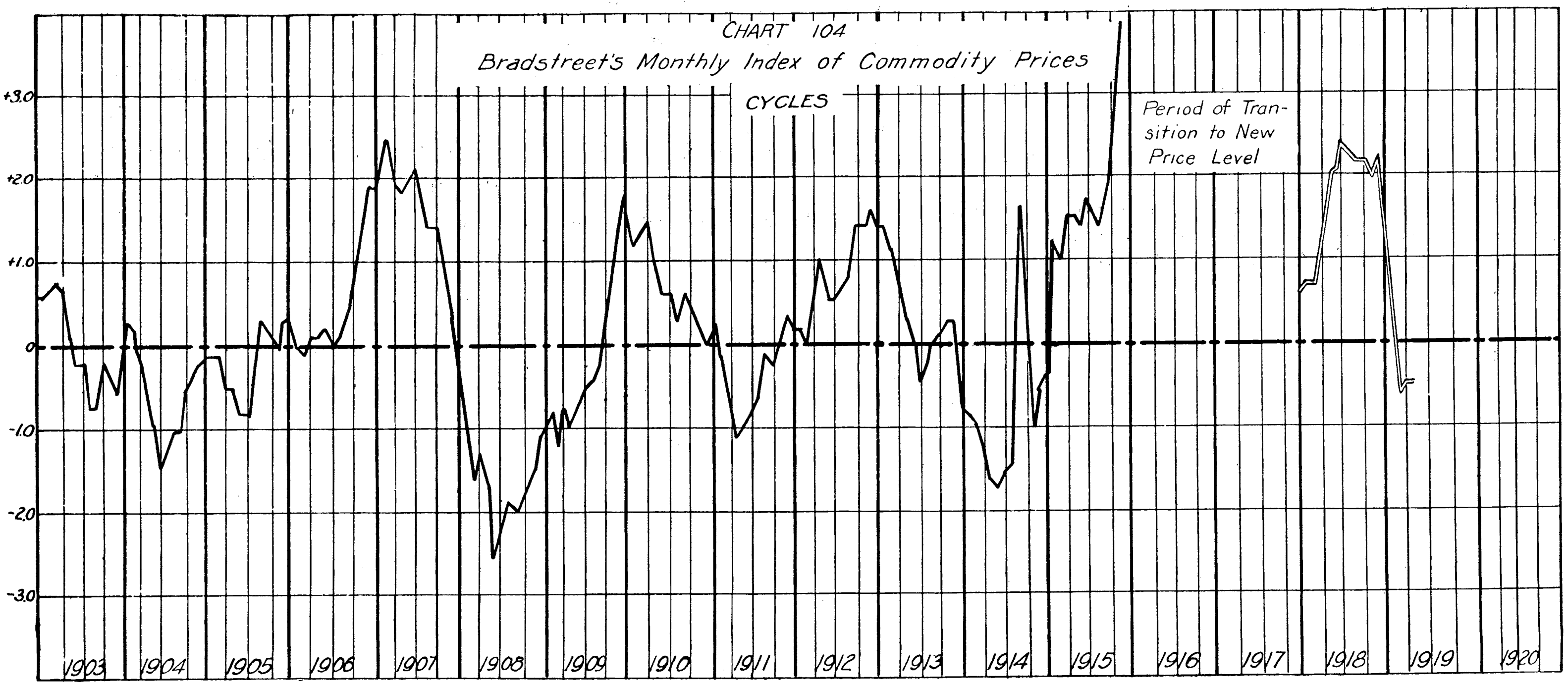

CHART 104

Bradstreet's Monthly Index of Commodity Prices

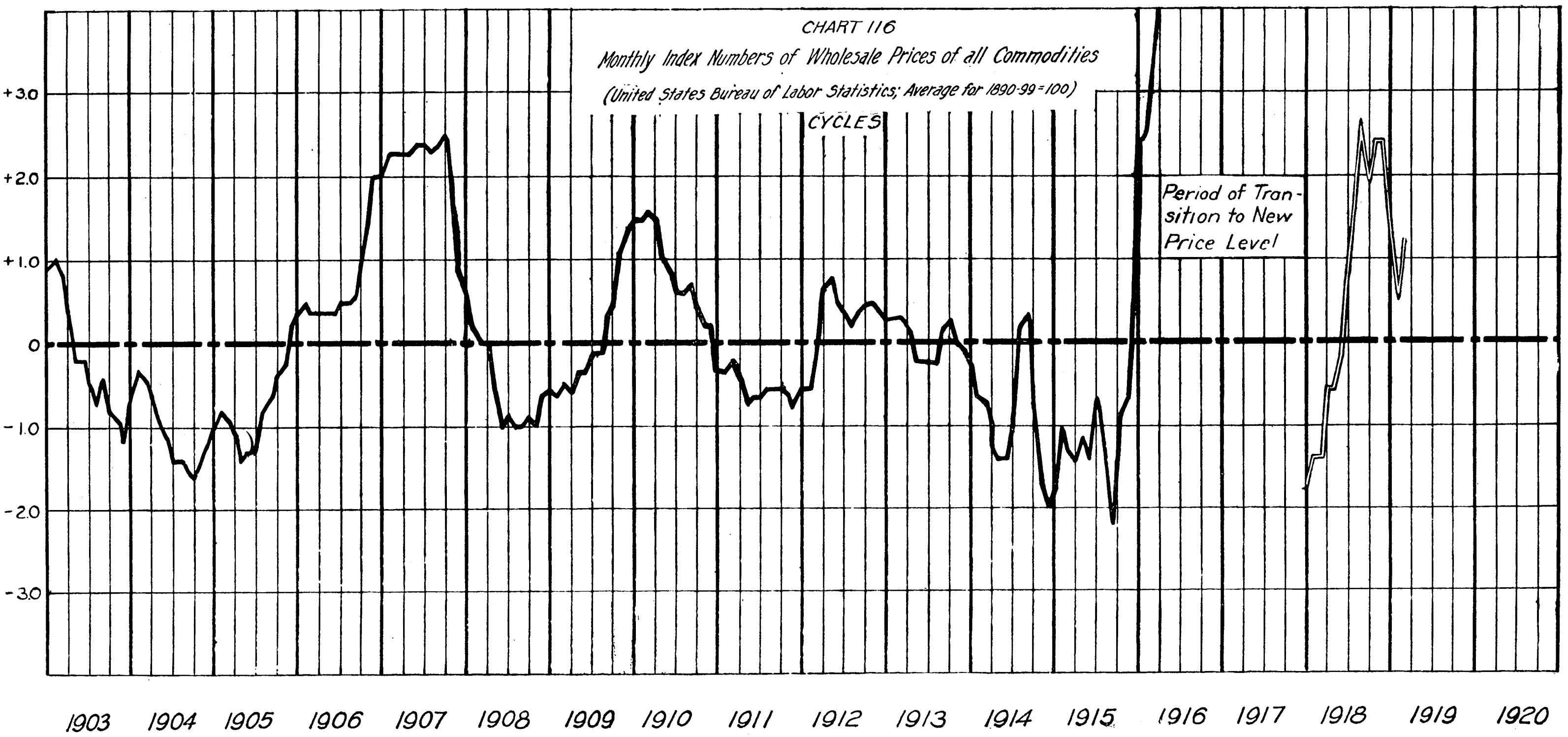

CHART 116

Monthly Index Numbers of Wholesale Prices of all Commodities

(United States Bureau of Labor Statistics; Average for 1890-99 = 100)